

LISTING OF THE CLAIMS

Claims 1-29: (canceled).

30 (new): A black low thermal expansion high specific rigidity ceramic sintered body, comprising:

having a thermal expansion coefficient of not more than $0.6 \times 10^{-6}/^{\circ}\text{C}$ in absolute value at room temperature,

a modulus of elasticity (Young's modulus) of not less than 100 GPa,

a specific rigidity (Young's modulus/specific gravity) of not less than $40 \text{ GPa}\cdot\text{cm}^3/\text{g}$, and

assuming a black tone.

31 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30, having a chemical composition comprising:

8.0 - 17.2 mass % of MgO ,

22.0 - 38.0 mass % of Al_2O_3 ,

49.5 - 65.0 mass % of SiO_2 ,

a total of 0.1 - 2 mass % of one or more transition elements as reduced to oxides,

0 - 2.5 mass % of Li_2O , and

having the mass ratios satisfy the relationships of $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{MgO} \geq 3.0$ and $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{Al}_2\text{O}_3 \geq 1.2$.

32 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30,

wherein the total reflectivity of the sintered body is not more than 17% at a wavelength of light in the range of 200 - 950 nm.

33 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 31,

wherein the total reflectivity of the sintered body is not more than 17% at a wavelength of light in the range of 200 - 950 nm.

34 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30,

wherein the apparent porosity of the sintered body is not more than 2%.

35 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 31,

wherein the apparent porosity of the sintered body is not more than 2%.

36 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30,

wherein not less than 80 vol. % of the crystal phase of the sintered body is a crystal phase of cordierite.

37 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 31,

wherein not less than 80 vol. % of the crystal phase of the sintered body is a crystal phase of cordierite.

38 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30,

wherein the thermal expansion coefficient is not more than $0.3 \times 10^{-6}/^{\circ}\text{C}$ in absolute value at room temperature.

39 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 30,

wherein the modulus of elasticity is not less than 120 GPa and the specific rigidity is not less than 50 $\text{GPa} \cdot \text{cm}^3/\text{g}$.

40 (new): A black low thermal expansion high specific rigidity ceramic sintered body according to claim 31,

wherein the chemical composition has such mass ratios as satisfy the relationships of $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{MgO} \geq 3.65$ and $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{Al}_2\text{O}_3 \geq 1.3$.

41 (new): A method for the production of a black low thermal expansion high specific rigidity ceramic sintered body, comprising:

forming the sintered body in an atmosphere of a non-oxidizing gas at a temperature in the range of 1200 - 1500°C.

42 (new): A method for the production of a black low thermal expansion high specific rigidity ceramic sintered body according to claim 41,

wherein the non-oxidizing gas is one or more members selected among argon, helium, nitrogen and hydrogen.

43 (new): A method for the production of a black low thermal expansion high specific rigidity ceramic sintered body according to claim 41,

wherein a raw material powder for the sintered body is one or more members selected from the group consisting of cordierite powder, talc, magnesia spinel, magnesia, magnesium hydroxide, magnesium carbonate, $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$ powder, lithium hydroxide, lithium carbonate, alumina powder, silica powder, kaolin powder, and mullite powder.

44 (new): A method for the production of a black low thermal expansion high specific rigidity ceramic sintered body according to claim 43,

wherein not less than 70 mass % of the MgO component as the MgO-source raw material is supplied by one or more members selected from the group consisting of electro-molten cordierite powder, synthetic cordierite powder, and talc powder.

45 (new): A method for the production of a black low thermal expansion high specific rigidity ceramic sintered body according to claim 41,

wherein the sintering method is a hot press method, an HIP method, a gas pressure sintering method, or a normal pressure sintering method.

46 (new): A black low thermal expansion high specific rigidity ceramic sintered body, comprising:

having a thermal expansion coefficient of not more than $0.6 \times 10^{-6}/^{\circ}\text{C}$ in absolute value at room temperature,

a modulus of elasticity (Young's modulus) of not less than 100 GPa,

a specific rigidity (Young's modulus/specific gravity) of not less than $40 \text{ GPa} \cdot \text{cm}^3/\text{g}$, and

assuming a black tone;

said black low thermal expansion high specific rigidity ceramic sintered body having a chemical composition comprising:

8.0 - 17.2 mass % of MgO,
22.0 - 38.0 mass % of Al₂O₃,
49.5 - 65.0 mass % of SiO₂,
a total of 0.1 - 2 mass % of one or more
transition elements as reduced to oxides,
0 - 2.5 mass % of Li₂O, and
having the mass ratios satisfy the relationships
of $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{MgO} \geq 3.0$ and $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{Al}_2\text{O}_3 \geq 1.2$.

47 (new): A method for the production of a black
low thermal expansion high specific rigidity ceramic
sintered body, comprising:

forming the sintered body in an atmosphere of a
non-oxidizing gas at a temperature in the range of 1200 -
1500°C;

said black low thermal expansion high specific
rigidity ceramic sintered body, comprising:

having a thermal expansion coefficient of not more
than $0.6 \times 10^{-6}/^\circ\text{C}$ in absolute value at room temperature,

a modulus of elasticity (Young's modulus) of not
less than 100 GPa,

a specific rigidity (Young's modulus/specific
gravity) of not less than 40 GPa·cm³/g, and

assuming a black tone;

said black low thermal expansion high specific
rigidity ceramic sintered body having a chemical composition
comprising:

8.0 - 17.2 mass % of MgO,
22.0 - 38.0 mass % of Al₂O₃,
49.5 - 65.0 mass % of SiO₂,
a total of 0.1 - 2 mass % of one or more
transition elements as reduced to oxides,
0 - 2.5 mass % of Li₂O, and
having the mass ratios satisfy the relationships
of $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{MgO} \geq 3.0$ and $(\text{SiO}_2 - 8 \times \text{Li}_2\text{O})/\text{Al}_2\text{O}_3 \geq 1.2$.